

## CLAIMS

1. A miniature device comprising:
  - a body having a reaction chamber disposed therein;
  - a resistive heater electrically connected to a power source for
  - 5 applying power to said heater;
  - a temperature sensor disposed on a surface of said body for
  - determining a temperature within said reaction chamber; and
  - an appropriately programmed computer for monitoring said
  - temperature and operating said power source to selectively apply said current
  - 10 across said heater.
2. The miniature device of claim 1, further comprising a second reaction chamber fluidly connected to said reaction chamber.
- 15 3. The miniature device of claim 2, wherein said second reaction chamber comprises a microcapillary electrophoresis device.
4. The miniature device of claim 2, wherein said second reaction chamber has an oligonucleotide array disposed therein, said oligonucleotide
- 20 array including a substrate having a plurality of positionally distinct oligonucleotide probes coupled to a surface of said substrate.
5. The miniature device of claim 1, wherein said body comprises at least first and second planar members, said first planar member having a first
- 25 surface and a well disposed in said first surface, said second planar member having a second surface, said second surface being mated to said first surface whereby said well forms said cavity.
6. The miniature device of claim 5, wherein said temperature sensor
- 30 is deposited on said second surface wherein when said second surface is mated

with said first surface, said temperature sensor on said second surface is positioned within said cavity whereby a temperature at said temperature sensor is substantially the same as a temperature within said cavity.

5           7.     The device of claim 1, wherein said reaction chamber has a volume of from about 0.001  $\mu\text{l}$  to about 10  $\mu\text{l}$ .

          8.     The device of claim 1, wherein said reaction chamber has a volume of from about 0.01  $\mu\text{l}$  to about 1  $\mu\text{l}$ .

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          9.     The device of claim 1, wherein said reaction chamber has a volume of from about 0.05  $\mu\text{l}$  to about 0.5  $\mu\text{l}$ .

          10.    The device of claim 1, wherein said temperature sensor comprises  
15 a thermocouple having a sensing junction positioned adjacent said cavity, and a reference junction positioned outside of said cavity, said thermocouple being electrically connected to a detector for measuring a voltage across said thermocouple.

20           11.   The device of claim 10, wherein said detector for measuring a voltage across said thermocouple measures a DC voltage.

          12.    The device of claim 10, wherein said thermocouple comprises a first gold film adjoined to a chromium film as said sensing junction and said  
25 chromium film adjoined to a second gold film as said reference junction.

          13.    The device of claim 1, wherein said resistive heater comprises a chromium film and said electrical connection comprises two gold leads overlaying said chromium film and being electrically connected to said power  
30 source.